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Rail Road News.

Baltimore and Ohio Railroad.

The Cumberland Civilian of Friday says :—"The Baltimore and Ohio Railroad west of this place is progressing as well as could be expected at this season of the year. Now and then a snow storm comes and stops the work for a day or so. But the snow stays not long, and the never-failing effort that is always made in such cases to regain lost time in a little time brings all up square again. The work is pushed on with great energy.

Covington and Lexington Railroad.

The Cincinnati Gazette is urging the Cincinnatians to subcribe to the stock in the proposed railway from Covington to Lexington. The Gazette states that stock to the amount of three hundred thousand dollars has been taken in Covington and the neighborhood. In addition to this sum, the friends of the project expect to procure subscriptions to the amount of two hundred thousand dollars in the counties through which the road, when completed, will pass.

Railroad to Montreal.

We learn from Plattsburg Republican, that a large meeting of the buisness men of that place, was held last week, to take into consideration the project of building a road from Plattsburg to the Canadian line to connect with a projected road to Montreal. This road if built will give a direct railroad and steam boat communication with Albany and Montreal.

The Charleston and Memphis Railroad.

We learn from the Memphis Eagle of the 21st ult., that the most enthusiastic feeling prevails in Nothern Alabama with respect to this road, and that there is a fair prospect of its vigorous commencement and speedy completion.

Milwaukie Railroad.

The road from Milwaukie via Waukesha to the Mississippi, is in course of rapid construction. The Board of Directors have just published a favorable and encouraging report.

A Railroad is proposed between Newport and Fall River, to connect with the Boston and Fall River Road.

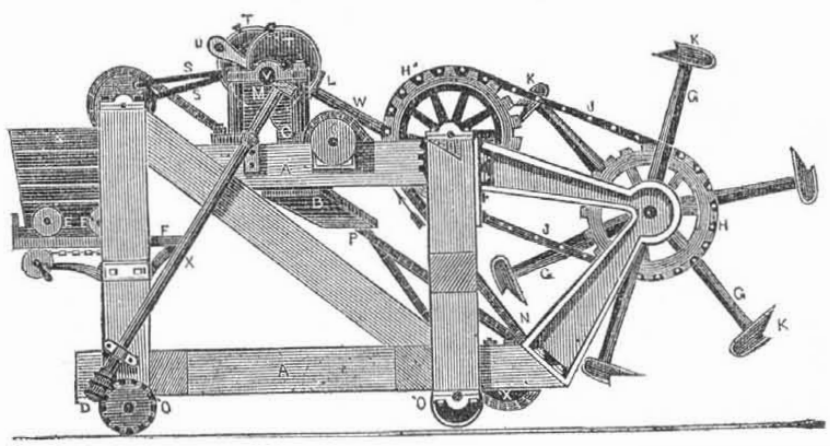
Dry Dock Sunk.

The largest of the Louisiana Dry Docks, at Algiers, sunk in deep water. The dock had been sunk for the reception of a ship, to the usual depth and when the pumping machinery was put in operation the whole dock was found to be in a sinking condition. It is estimated that the expense of raising it would be at least $10,000.

Warm Reception.

The whale which made a pleasure excursion into Provincetown harbor last week, was very inhospitably treated by the people of that place, being harpooned and cut up within an hour after his arrival. He made about fifty barrels of oil.

IMPROVED EXCAVATING MACHINERY.---Fig. 1.

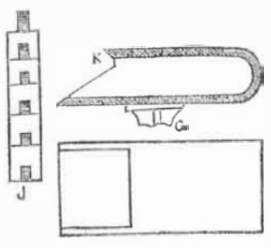


This arrangement of machinery is to place the cutting buckets on revolving arms, to scoop up the soil in the embankment, and deliver it in proper channels to conduct it away.

Fig. 1 is a side elevation, and figure 2 shows the cutting scoop enlarged—a side and a plan view, and the chain, J, on an enlarged scale also. A represents the frame mounted on flanged tyer wheels, O 1, for the purpose of travelling on the rails of the road. There is an angular frame in front, carrying the shaft of the revolving cutters, K K, which are attached to the arms, G G. W is a spindle with a bevel wheel, L, on it to receive motion from a bevel pinion, M. (dotted) on the main shaft, V. The said spindle, by a screw on its lower end, communicates motion to a bevel pinion on the outside of the shaft of the ratched roller, H, and from it a chain, J, gives motion to the cutting scoops, K, by passing over the other roller, H. N is an endless chain, which passes over the roller, O, and this chain is marked to show that it is a series of buckets which receive the dirt from the scoops by a spout on the other side, and by turning in the direction of the arrows, the said buckets discharge into the receiver, B. P P is another such endless chain of buckets, which receives motion from the two eccentrics, T T, at the top, on the shaft, V, which, by connecting rods, S S, move the roller, R. This set of buckets receive the earth from the spout, B, and deposit it in the receptacle, Z, which has a sliding bottom worked by the wheels, E E, on the rail, F, to allow the workmen to shoot it into the cart, thereby enabling this portable steam excavator to work its way along.

A motive power being employed to give motion to the crank, U, on the shaft, V, which, by the screw on the top of the angle shaft, X, and the one, D, on the lower part, causes the machine to advance at any speed, according to the nature of the ground to be excavated.—The whole of the parts must be built strong and firm.

Fig. 2.



The Artic Regions.

Along the whole of the limestone strata of these regions are innumerable lochs, or fresh-water lakes, presenting a singular spectacle. Although they have been waded in for miles, the depth is never more than from one to three feet. All these lochs and pools swarm with myriads of minnows, or the very small fish known by the name of barnsticles in the north, and in the winter the water around those fish becomes a solid mass to the bottom and the fish are often found in clusters, and so brittle that their bodies may be broken like a piece of glass, and yet on the ice thawing, animation is again established, and they become as lively as ever. Assistant surgeon Henry Mathias, of the Enterprise, belonging to the recent Artic expedition, had some of the ice, with a cluster of minnows, placed in a tumbler, and when gradually dissolved, it appeared very pleasing to witness the re-animation of these fishes under a milder temperature. The late gallant officer attributed the phenomennon to the heart of the little fish being surrounded with a fat oily liquid, which is never liable to be frozen; and was further confirmed in his impression, by ascertaining that while every other substance on board the vessel, unless carefully kept, was frozen, and had to be cut and heated before use, a cask of Stockholm tar of fat, standing on the deck at the time of the very lowest temperature, was not in the least frozen, and when required could be poured out to the very bottom, like treacle. The Enterprise and Investigator are now on their voyage again in search of Sir John Franklin. The only shadow of a hope for him is the fact that nothing whatever has been heard of him or his crew, which consisted of more than 100 hardy and able men.

Insects.

In a recent lecture delivered before the American Institute, by the celebrated Professor Agassiz, he stated some curious facts respecting insects. He said more than a lifetime would be necessary to enumerate the various species and describe their appearances.—There are numerous species collected in the museums of Europe, but they form only a small part of the whole number; and even of these, the habits and metamorphoses are almost entirely unknown. Meiger, a German, who devoted his whole life to the study, had collected and described six thousand species of flies, which he collected in a district ten miles in circumference, but of their habits he knew scarcely any thing. They have been collected in Europe twenty-seven thousand species of insects preying on wheat. In Berlin two professors are engaged in collecting, observing and describing insects and their habits, already they have published five large volumes upon the insects which attack forest trees.

A Long Fast.

A Letter in the Boston Post from South Weymouth, relates that a resident of that place, happening to take a ramble through a piece of woods, on Sunday, found inextricable entangled amid some trees, a vehicle called a buggy —the horse alive but emaciated, and almost frantic with hunger. The horse and buggy had been missing four weeks, the animal having strayed away, as is supposed, from Abington.

For the Scientific American.

Palmer's Patent Leg.

HALL OF THE FRANKLIN INSTITUTE,
Philadelphia, Jan, 11, 1850.

The Committee on Science and the Arts, constituted by the Franklin Institute of the State of Pennsylvania, for the promotion of the Mechanic Arts to whom was referred for examination an Artificial Leg, invented by Benjamin Franklin Palmer, report—

That the peculiarities of this invention consist in part, first,

An ingenious arrangement of springs and cords in the inside of the limb, by which, when the wearer is in the erect position, the limb is extended and the foot thrown forward, whilst, when he is seated the limb remains flexed so as to present a natural appearance.

Second—By a second arrangement of cords and springs in the inside of the limb, the foot and toes are gradually and easily extended, when the heel is placed in contact with the ground.

In consequence of this arrangement, the limping gait and the unpleasant noise made by the sudden stroke of the ball of the foot upon the ground in walking which is so obvious in the ordinary Leg, is avoided.

Third, By a peculiar arrangement of the knee-joint it is rendered little liable to wear, and all lateral or rotary motion is prevented.

It is hardly necessary to remark that any such motion is undesirable in an artificial leg, as it renders its support, unstable, &c.

The pressure of the artificial leg is made uniformly upon the surface of the sides of the stump, and not upon the end, by which arrangement the danger of ulceration and inflammation of the flaps covering the end of the bone, is, in a great measure avoided.

The committee have seen the artificial leg worn by the Inventor himself. It is light, well shaped, easily adjusted, and of a surface readily kept clean. The shape of the leg is such as to represent exactly, when clothed its natural fellow.

He is enabled, by means of his invention, to walk without a cane, in such a manner as readily to deceive one not acquainted with the facts of the case. All the natural movements of the limb, except motion laterally, (which is undesirable) are beautifully executed. He can throw either leg over the other, and can mount a height of five inches, with either leg indifferently, without assistance.

In conclusion the committee would remark, that the artificial leg of Mr. Palmer is superior to any that has yet come under their notice. It is light, strong, beautifully shaped, apparently very durable, self-acting in a greater degree than any they have ever met with, easy and natural in its motion, and possessing, apparently, all the qualities desirable or attainable in such an invention.

The Committee would recommend the award to the inventor of the "Scott's Legacy Medal and Premium,"—[a medal bearing the inscription "To the most deserving," accompanied with $20. Awarded,]—and also to the Committee on Exhibitions to award him the first premium for his model exhibited in the late Exhibition. By order of the Committee,

WM. HAMILTON, Actuary.

[It gives us much pleasure to publish the above document from this eminently scientific body, concerning the superior mechanism of which we have frequently spoken, and to which we would call the attention of all who need such an assistance, and desire to obtain the most perfect article. B. F. Palmer & Co. are now located in Springfield, Mass., and are the only manufacturers.

There is a vast fund of original and interesting matter in our columns this week.

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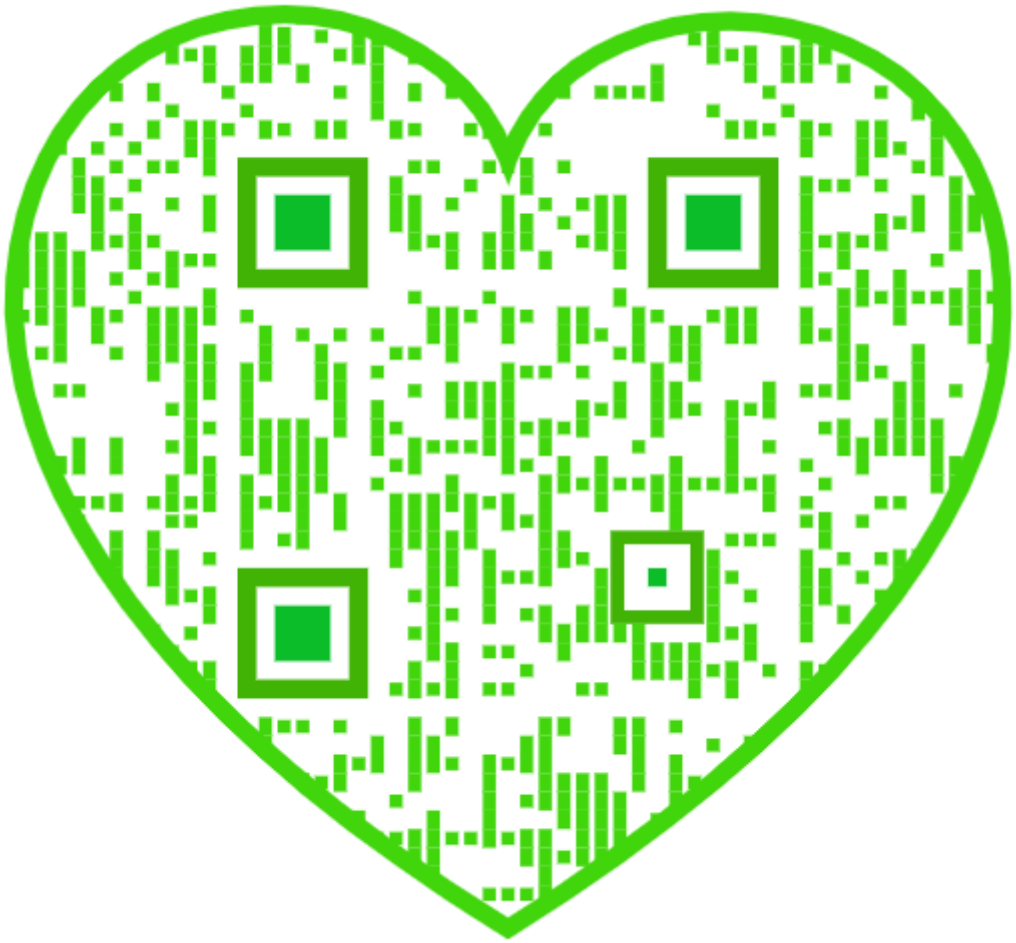

Miscellaneous.

Correspondence of the Scientific American.

WASHINGTON CITY, Feb. 12, 1850.

On Thursday, the Secretary of the Navy, accompanied by a number of scientific gentlemen, will visit Norfolk to witness the launch of the U. S., steamer, Powhatan, and to test the machinery. Before starting on her cruise, she will make an experimental trip.

There is to be a large meeting of capitalists next week, for the purpose of considering the plan of establishing a line of steamers between your city and Richmond. Bishop Potter has engaged to deliver a course of lectures at the Smithsonian Inssitute. He lectured last evening, on the tendency of science to cause superficial philosophers to forget the great "First Cause." He attempted to controvert many of the positions assumed by the author of the "Vestiges of Creation," but in the opinion of many the attempt has by no means successful. Beside the author of the "Vestige" all along says that God is ever working, but by and through certain laws. The steam frigate Saranac, which is expected to start on a cruise in a few days, is furnished with two inclined engines of 350 horse power; cylinder 60 inches in diameter, 9 feet stroke; air pumps, 43½ inches in diameter at the neck, connecting rod 18 feet long; weight of centre shaft, 8,000 pounds; journals, 16,000 pounds each; cranks, 3,500 pounds each. The weight of the three boilers is 186,336 pounds; and the cost of the engine and boilers, $24,000.

A hundred thousand yards of cotton were manufactured at Georgetown, in this district, last month, of very superior quality. The proprietors of the factories are chiefly northern men. The Committee of the House to whom was referred the memorial, accompanied by a plan for taking the Yeas and Nays by electricity, will report against it as impracticable. During the past year, the Government has paid $14,000 for altering flint locks to percussion. The number of muskets made at the various armories in 1849 was 23,500. A Dr. Lillie has announced his intention to lecture here on electricity. He has constructed a machine of great power, and claims to have effectually overcome the difficulty in the accumulation of electricity in sufficient quantities so as to make it a main power in the movement of machinery.

An attempt is making to get up an opposition telegraph line between this city and New Orleans. The present line frequently takes 24 hours in transmitting a message, while on the northern lines would be sent through in a few minutes. The Naval Committee of the House here reported a bill authorizing the purchase of the patent right of Espy's Ventilator for the use of U. S. vessels. It will not pass without great opposition. The sixth annual report of the South Carolina Railroad Company, shows a profit during the last year of $428,403. The road is 242 miles long. Specimens of the fossilized forest recently discovered beneath the mud deposite in Wallasey Pond, Lancashire, England, are to be sent to our National Institute.

Col. Pratt, President of your Mechanic's Institute, is about to present a block of marble for the Washington Monument in the name of the Mechanics' of New York.

It is reported that the brass statue of Gen. Jackson, will be erected at the east of the President's house, next week.

By a recent official document it appears, that there are 28 millions spindles at work in the world, out of which the share of England is 17 millions, and the United States, 2 millions.

A Boston medical writer says that it produces chilblains, chapped skin, inflamed eyes, and colds, to go to the fire suddenly when you are very cold. Accustom yourself to the warmth by degrees.

Segar Machine in Cuba.

A machine for making segars, some of which are employed in the United States, has been introduced into the Island of Cuba, and patented there.

Flying Kites in Canton.

A foreign missionary thus writes of kite-flying in Canton: "The sky is in a universal flutter of kites. I counted this afternoon from my window ninety-three, which were flown at various heights with great skill. Some represented hawks, and admirably immitated their manœuvres in the air, poising themselves, and darting; gaudy butterflies floated around; and dragons, formed of along succession of circular kites, with a fierce head, flew about the sky. The majority were of merely fanciful shape.—Loud noises, like a wind instrument, could be heard from them. The most amusing form was that of a huge fish, which swam through the blue above, moving its tail and fins with a ludicrously natural effect. Those, like animals, are also flown in pairs, and made to fight." *

Economy of Fodder for Animals.

Every farmer should be a scientific man in his line, that is, he should pursue the best methods of doing everything in the best manner, and economy is the root of science. We do not mean by "economy," stinginess, for that is the worst kind of extravagance, but we mean *care*, wisdom and observation. For example, it is not good to feed cattle on mere straw, but then if we can find something to combine with the straw, to make it good fodder, surely it is wise to use it as such. By cutting straw fine, and immersing it in boiling linseed meal and stirring it up, a most excellent feed is made for oxen and other cattle. Corn stalks are also good, if prepared as follows:—Cut the stalks in a machine and place them in a hogshead, steam them by pouring boiling water upon them and covering them up for sometime with a blanket. Put some salt among them, and when cold strew ever them a little ground meal and a most excellent fodder is the result.

A Smart Old Lady.

In the town of Williamsburg, Mass, resides Mrs. Aaron Warner, a lady seventy-five years of age. During the summer and autumn of 1848, she spun one hundred runs of woolen yarn; doubled and twisted forty-five of it, knit seventy-six pair of men's seamed socks and wove sixty yards of rag carpeting, besides doing the ordinary house work for her family.—The past summer, she made four hundred weight of most excellent cheese; wove more than twenty-five yards of flannel; spun and doubled and twisted yarn for 60 pairs of men's socks, besides doing many other kinds of work. She is a perfect pattern of order, neatness and industry, and furnishes an example that all younger ladies would do well to imitate.

Curious Fact.

A curious fact is mentioned in the Wenaugh (Irish) Gaurdian in reference to Dr. Laughley, who was confined in jail, and who fasted for forty days. The reason for abstaining was caused by a total loss of appetite, nausea, and a disinclination to eat. All the organs of the body ceased to perform the functions in the animal economy, with the exception of the heart and lungs; and it is a curious coincidence also that during that time the loss he sustained in weight was three stones, less by two pounds, making exactly a loss of forty pounds, being one pound per day for every day he fasted.

Singular Occurrence.

A Munich periodical relates that a man named Matthias Mangelbacher, being attacked by a severe fit of tooth-ache, stopped up his ears with gun cotton, not knowing but what it was the common cotton he was accustomed to use in such cases. In retiring to his room for the night, he seated himself before a wood fire, from which a spark flew out and struck the tuft of the gun-cotton, which exploded with such violence that it blew the whole top of his head off.

Water was let into the new reservoir of the St. Louis Water Works, for the first time, on the 21st ult. The reservoir is of solid masonry, a heavy rock wall without, and brick lining, laid in cement, within. It is two hundred and fifty feet square and fifteen deep, and capable of holding one million gallons of water, or, with the present population of the city, a supply for seven days. The water is pumped up from the river, a distance of 10,000 feet, by steam engines.

The Late Explosion.

A Coroner's Jury composed of eminent men, have examined witnesses and reported on the cause which led to the terrific explosion in Hague Street, this city, last week, whereby 64 of our fellow-men were hurried into eternity, in a few moments, and a great number were severely wounded. It is our intention to review the whole subject next week. In the mean time, we would say, that the evidence is of a most contradictory character, excepting on one point, and that is, there were too high a pressure of steam on the boiler, and culpable recklessness on the part of the owners of the boiler. No one can erase that part of the evidence. It is too strong to be washed out by any process of pleading, interest, or alchemy.

Tribute to Colt, the American Inventor.

A letter has been received from the American Charge d'Affaires, John P. Brown, Esq., at Constantinople, by Mr. Samuel Colt, the inventor of the fire-arms which bears his name, announcing that the next European steamer would bring out an elegant snuff box, set in diamonds, of the value of $1,300, designed as an evidence of the very high appreciation of his weapon entertained by Mehemet Ali Pacha, Serosbi of the Army. We perceive that Mr. Colt has lately secured a patent in England.

Great Rise in the Mississippi.

The N. O. Picayune states that the Mississippi is rising rapidly. At Bayou Sara the country is partially submerged, and at Vicksburg the water is only four feet lower than at the highest mark of last year. In the Parish of St. John the Baptist, a hundred houses have been rendered untenantable by the overflow or water.

Doctors and Drugs.

The Scalpel charges that many physicians of New York are interested in drug stores, to which they send prescriptions, and are credited on all they send a large share of the charges; and that prescriptions are often made out apparently requiring great care in compounding, and for which high charges are made, but which in fact cost little or nothing.

We learn from the Jersey City Sentinel that the Directors have given orders to have that part of the Canal from Newark to Jersy City put in complete order on the opening of the navigation season, so that transportation can be made directly from the coal regions to the New-York Bay.

Peppermint

Large fields of peppermint are cultivated in the praries of Michigan. It is cultivated for the purpose of making peppermint oil.

Throughout the vast empire of Russia—through all Finland, Lapland, Sweden, and Norway—there is no cottage so poor, no hut so destitute, but it possesses its vapor-bath, in which all its inhabitants every Saturday, at least—and every day, in cases of sickness—experience, comfort, and salubrity.

According to the late accounts from California, it appears that the miners make very little money compared with what the speculators are doing.

Mass Convention.

A convention will be held at Rust's Hotel, in the city of Syracuse, on Wednesday, the 20th day of February next, for the purpose of taking he necessary measures to procure a repeal or modification of the Act of Congress, passed July 8th, 1845, which, under the appearance of authorizing a reissue of the Woodworth Patent for Planing Machines, gives the present holders of the Letters Patent the exclusive right to combinations of machinery never invented by Wm. Woodworth, nor during his life time claimed as his invention, and which are not found in the original patent of 1828. All persons who are opposed to the odious and oppressive monopoly existing under the provisions of said act, are earnestly invited to attend.

N.B. Papers throughout the State will please to copy and oblige

TWENTY THOUSAND MECHANICS

January 23, 1850.

Works on Science and Art.

ICONOGRAPHIC ENCYCLOPEDIA.—Part 5 of this splendid work is issued by Mr. R. Garrigue, of Barclay street, this city. From it we extracted an article on "*Hail*" last week.—The plates in this part are 20 in number, and in a single plate there are about 20 different figures, making about 400 figures, and they are engravings which stand alone for correctness of execution and beauty of finish. They illustrate ornithology, marine animals, and the tribes of serpents, crocodiles, &c., being confined to natural history. The text pages are descriptive of Magnetism, Electricity and Meteorology, being confined to Physics. The text is very clear and plain: we must recommend it on that account as well as for the sake of the useful information it contains. This really is a splendid work—each part is one dollar, and no single parts sold—the subscription must be for the whole work.

TYPOGRAPHICAL MISCELLANY.—We have received No. 2 of a new monthly work, edited and published by Joel Munsel, No. 58 State street Albany, N. Y. This relates to the History, Art, and all that is interesting about Printing. It is illustrated with wood engravings, and is got up in what is termed "good style." Every printer in America should be a subscriber: it is only $1 per annum. Mr. Munsell is one of the best printers in this or any other country. He has long been collecting information on the subject, and we believe that he has the best library of old and new books on the subject in this country. He is an antiquary of a printer, and has a rare taste that way. He knows how to *chase* up a piece of information out of any book, and how to *chase* it into a book better than any other man with whom we are acquainted. We believe that this will be one of the most valuable and interesting magazines in the world.

LITERARY NOTICES.

TREATISE ON MARINE AND NAVAL ARCHITECTURE. Number 2 of this incomparable work by J. W. Griffith, Esq., Marine and Naval Architect, is just issued. This number treats of the Laws of Resistance and Propulsion. It is beautifully illustrated. Each number is 75 cents, and can be furnished at this office. We are positive that no operative ship-carpenter in the United States, can lay out money to better advantage than by purchasing this work.

SHAKSPEAR'S WORKS.—No. 9, of Phillip's, Sampson & Co's., splendid edition of these works, is now ready. A careful examination of this and the preceding numbers, warrants the opinion that for beauty of letter press, paper, and general arrangement, it will exceed any other ever offered to the public. The present number contains the full play of "Love's Labor Lost," with a fine engraving of the Princess of France. Dewitt and Davenport have the numbers for sale.

A TREATISE ON MILCH COWS.—This is a most splendid little work, by J. S. Skinner, published by Bangs, Platt, & Co., No. 204 Broadway, N. Y. It is a translation of Guenon's French work, to which is added Mr. Skinner's observations. Those who desire to become better acquainted with the milch cow, whereby her qualities of quantity and quality can be known by observing her, should by all means become acquainted with this treatise. The price is only 37 1-2 cents.

Messrs. Hewitt, Tillotson & Co., 59 Beekman St. N. Y., have undertaken to furnish the literary public with the most splendid edition of the Waverly Novels ever issued from the American press, and if the specimen before us is to be the criterion from which we are to base an opinion, we can say that the task will be most faithfully performed. They are in imitation of the celebrated Abbotsford Edition published some time since, in London, and are sold for a much less price. The first of the series introduces the reader to "Ivanhoe," one of the most famous productions of the author, richly illuminated by Mr. Hewitt. We need not express an opinion concerning Scott's Novels, they are too well known to require it. We can only say that aside from the intellectual food derived from these works, they constitute an ornament to every well selected library. The numbers can be had of booksellers generally.

C. M. Saxton, 121 Fulton Street, N. Y., has for sale a very neat pamphlet of 90 pages, devoted to breeding, rearing, diseases and management of fowls. The information is practical. Price 25 cents.

F Hagan, & Co. of Nashville, Tenn., and Samuel Hart, Sen., of Charleston, S.C., are authoized agents for the Scientific American.

Gen. Cass will please accept our thanks, for Congreessional documents.

Mr. Hale, formerly of this city, has been in Macon, Georgia, exhibiting his steam wheel.

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Waste of Ingenuity.

Americans have deservedly won celebrity by their practical applications of science. As inventors they take already the highest rank. Combining the quick perceptions of the French with the steady practical habits of the English, they merit the double praise which is divided between those rival nations. The French, it has often been said, originate inventions, the English render them available. Americans accomplish both.

Yet Americans labor under one disadvantage to which neither Frenchmen nor Englishmen are equally exposed. In both France and England the journals of scientific societies not only furnish a record of contemporaneous inventions, but also, so far as they extend back, a sort of Retrospective Review of Science. Thus the inventor, learning what has already been attempted in vain or successfully, is saved a great waste of the ingenuity which he might otherwise expend worse than in vain.

It would be well if a suggestion we once heard Dr. C. T. Jackson make, should lead some competent persons to undertake a Retrospective Review of science and scientific inventions, that might serve to prevent the waste of ingenuity of which we have spoken. The suggestion was to that purport, and was thrown out, as the distinguished chemist and geologist has thrown out so many invaluable suggestions, in the course of a casual conversation. Genius often scatters its bounties with the carelessness of the ostrich, that drops its eggs on the sands of the desert, without being anxious as to its claims of paternity over its own offspring. A Review of this kind mentioned, would infallibly lessen the number of occasions for the statement (if we remember rightly) of Mr. Verplanck, that in visiting our National Patent Office and in conversing with the officers of the establishment, it becomes a common subject of remark, how prodigious a waste of ingenuity, in various ways, and particularly in mechanical contrivance, takes place annually in this country, from the want of a more general knowledge of the actual state of improvement in the several departments of invention.

The paper which most nearly meets the wants of our inventors, is the "Scientific American," of New York. This most excellent scientific and mechanical paper, gives an accurate list of all new inventions, furnishing not only faithful descriptions, but often expensive and accurate drawings. Would it not be desirable for the American to seek to meet the necessity referred to in this article?

[The above is from our excellent contemporary, the Boston Olive Branch. The object to which it directs our attention, has been, we know, suggested by the best of motives, but as we have, perhaps, the best opportunity of any other periodical in America of judging between the waste of invention in America and Europe, and between the popular modes of spreading correct information about inventions among the people of both countries, we will endeavor briefly to show that there is no more waste of ingenuity, and better means at less expense, of obtaining the information spoken of by our contemporary, in this than any other country.

The first question to be asked is, "how do we know that there is a greater waste of ingenuity in this country than in Europe—what evidence have we that this is so? The only evidence mentioned above is "*the number of models in the Patent Office, and the number of applications made to get patents for things which are old.*" This is not a true guide to leads us to truth in this investigation. In the British Patent Office there are no models, so that comparison fails to enlighten us; and the nicest point of comparison, "the number of patent," is surely no criterion. An English patent costs $500, an American only $30. Before a British inventor applies for a patent, he expends more money to get information on the subject of his invention, by examining the rolls, than is paid by an American inventor, for patent fee and patent agent's fee all put together. These are some of the reasons why there are more evidences of a waste of ingenuity in our Patent Office than in the London one, but no evidence at all that there is more waste among the whole people. If the patent fees of Britain were reduced to the level of ours, we firmly believe that more than 50 per cent of waste ingenuity would be displayed there as compared with our Patent Office. A mere review of the progress of invention, that is, such kind of reviews as appears in the foreign magazines, is of no earthly use to inventors. There is not a single foreign journal in existence that can compare with the Scientific American for elaborate and minute information, regarding inventions in every department of Science. We speak this not to boast, but because we cannot say anything else, unless we denied the truth. For example, in Volumes 2 and 3, Sci. Am., we illustrated and described the whole of the mechanical movements, with about 300 wood cuts, and the whole art and practice of Electrotyping and gilding, with about 50 wood cuts; and in Volume 4 we illustrated the history of the rotary engine, with 67 wood cuts. No foreign magazine contains such minute information upon those subjects, and to our knowledge we have saved thousands of dollars to our country, and saved a great waste of ingenuity. We are now illustrating the history of propellers. No foreign magazine has yet done this, and we know that no subject requires it so much. The labor and expense to us is very great, for we have to search through many very rare works for information; but we have the consolation of knowing that already we have saved some individuals hundreds of dollars. We endeavor to keep up with the progress of science on all points, but for all this we know that many men will waste both time, genius and money on things already described in our columns. There is not a week passes over our heads that we have not to refer to at least ten correspondents for a description of *new* inventions of theirs, described in our former numbers.

From our knowledge of men and things, we are positive that a review, such as Dr. Jackson spoke of, could only be embraced in an Encyclopedia, and it would require to be as large as that of Rees'.

It is our intention to go on illustrating one art, historically, after another, as we have done the rotary engine, and are now doing with propellers, and in the course of five years more, those who own the whole series of the Scientific American, will possess an Encyclopedia on the Arts and Sciences unequalled by any other work.

New Ideas on the Sugar Manufacture.
By J. Scoffern.

[Concluded from page 155.]

This want of clearness, however, does not impede the perfect action of the test proposed to be applied; this testing is conducted as follows:—Pour into a part-filtered liquid about ten or a dozen drops of hydro-sulphate of ammonia, or about a fourth part of filtered liquids, one volume of hydro-sulphuric acid solution, and observe the appearance that it assumes; should any tinge of blackness occur from the addition of either test, it will be a proof that the liquid still contains lead in solution, and that it must be still farther gassed; on the contrary, should the result produce no visible change, it may be presumed that the gasing process has been continued long enough; but independent of that it is desirable to proceed a step farther in the testing, and for this purpose employ a solution of sugar-of-lead as a counter-test. Supposing the filtered liquor has been tested without any visible effect, or, perhaps, only the producing of a partial whiteness, he now drops, by means of a straw, a small quantity of sugar-of-lead solution, when, if the presumption were correct with regard to the previous tests, a patch of blackness will be observed to ensue; this will, perhaps, remain, or it may change to a greyish colour. But the indication of such counter-test, if so accompanied, will be perfectly satisfactory to the operator that all trace of lead has been effectually removed. The next part of the process is to heat the liquor which has been treated as before explained, for which purpose the heat of steam (and other means may be resorted to); but it must be conducted with considerable rapidity until it attains a temperature of 180° Fahrenheit; a quantity of chalk, powder marble, or other convenient form of carbonate of lime, equal to about one fifth of the lead material used in the previous process, is to be added to the heated liquor, and in order to facilitate the admixture of the chalk or other carbonate therewith, they should be reduced to the form of a paste by mixing them with sufficient water for the purpose; the heat is then to be maintained at 80 degrees for about a quarter of an hour. When the density of the liquor is two of sugar and one of water, animal charcoal is yet to be employed as a filtering agent or otherwise it would be better to use solutions of a lesser density. Having progressed thus the liquor may now be considered in a proper state to be filtered, previous to its being emptied on the charcoal beds. In the application of this invention to the refining of cane-juice, it is preferable to nutralize or render it slightly alkaline before subjecting it to the action of the lead material; test it, therefore, with litmus paper, and should the colour be changed by acid or salts it should be nuetralized by lime or chalk; if lime is to be used, that which is known as cream of lime is the proper article; and if chalk be employed, it is to be with water. When the juice is at a heat of about 180 degrees, and chalk is is applied, it must be mixed with it by stirring in small quantities till the juice discontinues to indicate the presence of acid, or at least in a trifling degree. In the case of lime being employed, the process is carried on till slight but distinct alkaline solution is indicated to the test. The manner of applying the lead material is as above described: the proportions being that of 150 grains to the imperial gallon of juice, but such proportion being subject to variation according to the character or density of the juice, together with the degree of purity thereof; the liquor is then to be filtered, and subjected to the gasing process as before described, and also to the action of carbonate of lime, so as to neutralize all acid properties. In the case of the application of these improvements to the juice extracted from beet-root or other material, the opperation or process is conducted in the same manner as previously described, with respect to cane-juice. After the juice has been treated with lime, as ordinarily practised in operating upon this juice, larger quantities of the lead material will be required, and which is manufactured in the following manner:—Take say 12 gallons or any proportion of vinegar of 5 per cent strength; this is placed in a copper vessel, and heated to 160 degrees; he then mixes with the heated vinegar 40lbs. of litharge, previously reduced to a fine powder; this is performed gradually, taking care to keep the liquor in agitation by stirring while the litharge is added. The temperature must now be raised until the mixture boils, during which a thick crust will be formed on the bottom and sides of the pan, which must be frequently broken, so as to dislodge it therefrom. The ebullition may be continued until it becomes so thick that portions will frequently be blown out of the vessel by the boiling, on arriving at which stage the heat should be gradually decreased, and the moisture remaining dissipated by gentle heat, when the mass will be fit for use. Should vinegar of a greater strength be used than that before mentioned, a proportionably greater amount of litharge must, of course, be employed. The proceed thus obtained is a mixture of two or more of the basic acetates of lead, of which there are several, as recognised by chemists, and may be prepared by various means; but from cheapness and simplicity, the foregoing is more applicable for the purpose intended.

Wine-Vinegar.

The following is the plan of making vinegar at present practised in Paris The wine destined for vinegar is mixed in a large ton With a quantity of wine lees, and the whole being put into sacks, placed within a large iron bound the liquid matter is pressed out.

What passes through is put into large casks, set upright, having a small aperture in their top. In these it is exposed to the heat of the sun in summer, or to the heat of a stove in winter.

Fermentation comes on in a few days. If the heat should then rise too high, it is lowered by cool air, and the addition of fresh wine. In summer the process is generally completed in a fortnight; in winter double the time is requisite. The vinegar is then run off into barrels, which contains several chips of beech wood to clarify it: in about a fortnight it is fit for sale.

Almost all the vinegar of the north of France being prepared at Orleans, the manufactory of that place has acquired such celebrity as to render their process worthy of a separate consideration.

The Orleans casks formerly contained nearly 200 gallons of wine, but at present only about half that quantity. Those which have been already used are preferred. They are placed in three rows one over another, and in the top have an opening of two inches diameter, which has a bung fitting close; there is another spill hole on the side to admit the air.—Wine a year old is preferred for making vinegar, and is kept in adjoining casks, containing beech shavings, to which the lees adhere.

The wine thus clarified is drawn off to make vinegar. At the first setting up of a manufactory, so much good vinegar, boilling hot, is first poured into each cask, as to fill it up one-third of its height, and left there for eight days, till the vessels are two-thirds filled. Eight days afterwards, ten gallons of vinegar are drawn off for sale, and the cask is again gradually filled. Thus each cask or mother yields twice its own admeasurement of vinegar in a year.

It is necessary that a third part of the cask should always be left empty.

In order to judge if the mothers work well, the vinegar makers plunge a spatula into the liquid, and if it brings up a white froth, the making of the vinegar is judged to succeed well; if red, they add more or less wine, or increase the temperature.

In summer the atmospheric heat is sufficient. In winter stoves heated to about 75° Fahrenheit maintain the requisite temperature in the manufactory.

The casks get filled with lees in about ten years, and require to be cleansed; and fresh casks must be mounted every twenty-five years.

If the vinegar is not clear, it is clarified by being put for some time in a cask filled with shavings of beech wood.

In some parts of France private persons keep, in a place where the temperature is mild and equable, a venegar cask, into which they pour such wine as they wish to change into vinegar, and it is always kept full, by replacing the vinegar, as fast as it is drawn off, by new wine.

To establish this household manufacture, it is only necessary to buy at first a small cask of good vinegar.

A slight motion is found to favor the fermentation of vinegar, and its decomposition after it is made.

Chaptal thus ascribes to agitation the operation of thunder; though it is well known that when the atmosphere is highly electrified, beer is apt to become suddenly sour, without the concussion of a thunder storm.

In cellar, exposed to the vibration occasioned by the rattling of carriages, vinegar does not keep well. The lees which had been deposited by means of isinglass and repose, are thus jumbled into the liquor, and make the fermentation re-commence.

New Language.

One of the Sierre Leone Agents of the Church Mission Society of London, the Rev. Mr. Koelle, has discovered a written language existing in the interior of West Africa, in the Vy language. Mr. Koelle says that the alphabet consists of about one hundred letters, each representing a syllable. The new character is said to have no analogy with any other known.—Mr. Koelle has taken a passage on board a vessel going to the nearest point from which the Vy nation can be reached, with the resolution to investigate fully this intercsting discovery.

[The above we copy from an exchange, and we have noticed it in quite a number. This Vy language must be a curious one, we think, but it is no doubt of Yankee origin, for it looks exactly like some of the characters used by Prof. Morse in his early experiments on telegraphing.

At a dinner of the newspaper venders in London, Dickens stated that one hundred and fifty years ago there was not a single daily paper in London and ten years later only one.

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New Inventions.

Scientific Memoranda.

MEANS OF ARRESTING THE FATAL EFFECTS OF CHLOROFORM.

An eminent surgeon of France relates two cases, in which the inhalation of chloroform proved nearly fatal : he however succeeded in reviving his patients, after all ordinary means had failed, by placing his mouth upon theirs, and forcibly insufflating the lungs by rapid aspirations and expirations. A medical practitioner in Paris states that in two instances of approaching dissolution by the inhalation of chloroform, he recalled life by thrusting two fingers deep into the throat, down to the larynx and œsophagus ; a sudden movement of expiration followed, and recovery took place.

NEW OPTICAL INVENTION.

A French savant, M. Fiqueau, has just discovered a method of measuring the speed with which light travels, without any resort to the regions of astronomy. A revolving disc, with teeth (like a circular saw) is so adjusted that, knowing the number of revolutions in a second, he knows the fraction of a second which any one of the triangular spaces at the circumference of the disc occupies in passing a certain point. Two glasses are fixed opposite each other, so that the focus of the one (having a mirror) reflects a ray of light, starting from the focus of the other back to that focus again. A disc is provided to revolve at this point ; and the eye. observing whether the ray appears, or is eclipsed, knows whether it has encountered a tooth of the disc, or one of the vacant spaces between the teeth ; and thus elements are found for a calculation which shows the speed of light to be very nearly the same as that arrived at by the astronomical calculation of Bradley or Roemer.

PARIS ACADEMY OF SCIENCES.

At a recent meeting of this body, M. Desprets read a description of an Electrical apparatus, by means of which he obtains a heat of greater density than was ever before obtained, and that he is able to fuse substances which have hitherto resisted the action of every kind of fire.—M. Grange read a paper on that terrible disease in the Swiss valleys, named the Goitre. He stated that the cause of it was magnesia in the waters, and that it could be cured by minute doses of iodine salts. In one year, he stated, the disease would be cured.—M. Dussan read a paper on the application of manures to seeds before they were sown or planted, instead of manuring the soil. He stated that the experiment had been tried by himself with success..

NAVIGATING THE AIR.

A lecture was recently delivered in Paris upon this subject, when the lecturer took the following grounds, and astonished his audience by the profundity of his reasoning. He said, "the more imponderable the mass, the greater the power : earth is less powerful than water—water less powerful than air—air less powerful than electricity, and electricity less powerful than the soul. If we attempt to walk on a deep mass of snow, we sink ; if we spread a large board over it, we can walk safely. So with air : if we make an air-ship hundreds or thousands of feet long, the sustaining power of the air may possibly act in its favor ; and gas constantly generated in this machine, and steam or electricity being the motive power, it may rush round the world like a huge common carrier of heaven. What we need to redeem society, is the philosophy of analogy sternly carried into every department of life—inward and outward—spiritual and practical—in thought, industry, intercourse, faith and action."

Such are some views delivered in a lecture in that city, sometimes called the centre of the "Civilized World." There is not a Yankee boy but could overturn all the arguments.

Sash and Blind Machine.

We refer our readers to the advertisement of Jesse Leavens in another column. This machine is all that the patentee states, and we understand has given satisfaction to all who have it in use.

Clothes Without Seams.

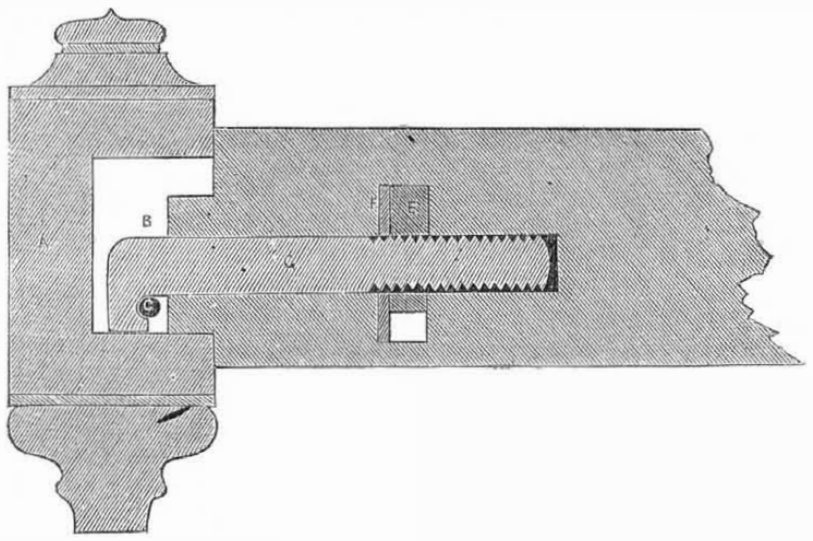
Some of the English papers say that the recent improvements in machinery justify the belief that garments will soon be finished in the loom of any size, shape or pattern that may be required.

[This can be done now, but at an expense far beyond what any person would pay for the same. We have seen shirts without seams, woven with buttons and button holes, as finely finished as if by the needle, the buttons were woven too. We have seen the portrait of Gen. Taylor woven on satin.

Cure of Stammering.--New Discovery.

Dr. Boardman, now residing in this city, who, for twenty-five years had an impediment in his speech, made the discovery, that by placing his organs in certain positions, he could speak freely like other men. This disoovery he has reduced to a science, and teaches the art to those who are as unfortunate as he was. He has cured a great number, and by strict attention to the rules he lays down, it is said that any person afflicted with stammering will be able to cure themselves.

IMPROVEMENT IN BEDSTEAD FASTENINGS.---Fig 1.



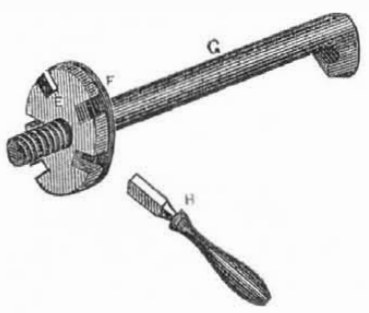
This is the invention of Mr. James Taylor of Macon, Georgia, and patented last Fall. It is a most excellent invention, as the following description of the annexed engravings will fully show. Figure 1 is a vertical longitudinal section. Figure 2 is an end view, and figure 3 is a perspective view of the fastening hook, and screw nut, E, detached ; and H is a driver to operate the nut. A is the post, D, is a section of the rail attached. The tennons at the ends of the rails, are not in length and depth of the mortises in the posts ; but in thickness, the tennons accurately fit the width of the mortises, C is an iron pin inserted in the mortise of the post ; G is hook inserted in the end of the rail, and it has a screw on its inner end. There is a small mortise cut on the side of the rail, into which is inserted the nut E, which is fixed around the screw of the fastening hook, G. Each rail is thus arranged and constructed. F is a washer on the inside of the nut mortise and the screw hook rod passes through it. The tennons on the ends of the rails, have sufficient vertical play in the mortises of the posts, to allow the fastening hooks to pass over the pins (represented by C), and by inserting the turner, H, into the notches of the nut, E, and by turning it round, the rail is drawn forward, tight up to the post. The mortises on the sides of the rails, may have slides to close them up, to prevent any thing getting into the interior.

There is one thing absolutely required to form a good bedstead, that is the perfect and close fit of the rails to the posts ; this bedstead fastening has this quality for a certainty.—There are bedsteads sold in this city in great quantities, with screws on the ends of round rails, which screw up by turning them round in thread openings of the posts. These are a bad kind of bedsteads, practically we don't like them, they are forever going wrong. I would be better to make all bedsteads with square rails. and these should be notched to receive slats of painted hard wood, which are far better than bed ropes.

Communications (*p. p.*) addressed to the inventor, at Macon, Georgia, will meet with prompt attention.

FIG. 2.

FIG. 3.



Dr. Gesner's Patent Kerosene Gas Light.

We stated last week that we would give some more information about Prof. Gesner's new Light, the patent claim of which was in the list of our last number. The information which we now present on the subject is gathered from an article addressed to the Academy of Natural Sciences, of which Prof. Gesner is a member.

During the past year, the attention of the Earl of Dundonald, formerly the celebrated Lord Cochran, was directed to the improvement of some sugar and coffee estates in the West Indies, and employed Dr. Gesner, Professor of Chemistry and Geology, to make experiments with the celebrated asphaltum of the Pitch Lake of Trinidad. In conducting the experiments, Dr. Gesner discovered that by dry distillation, the asphaltum, like coal or rosin, was capable of yielding large quantities of carburetted and bicarburetted hydrogen gases, now universally employed for the supply of light. But from its peculiar nature, there was a difficulty in applying the material to that purpose by any known process of manufacture.

The Dr. says, in the article referred to, "It is remarkable that so rich a hydro-carbon as asphaltum should have been so long overlooked, in reference to its capabilities for affording light. It has been tried for fuel, pavements, and for other purposes, both in Europe and the United States, but without success. For what purpose nature had formed such vast quantities of bituminous matter, which still continue to flow from the earth, was a problem not readily solved, until this discovery, which brings it into operation for illuminating purposes, to which it is admirably adapted.

In the analysis given by the chemists of Europe, of the bitumen of Trinidad, there is great diversity. Some have stated that it contains 20 and even 30 per cent. of silex, when in fact it seldom contains 10 per cent. of silica. The specimens submitted to their investigations must have been taken from the beach forming the great pitch lagoon of the Island, where the sand of the shore is frequently mixed with the bitumen."

By his experiments he has discovered that the bitumen of Trinidad yields 65.5 of volatile matter, and 36.57 of carbon, while the best cannel coal yields only 44.00 of volatile matter, and 52.60 of carbon—a great difference indeed. Coal also contains sulphur and nitrogen, while the asphaltum is perfectly free from these deleterious ingredients, and it is therefore far better adapted for illuminating purposes.

When this bitumen is melted it separates itself from its earthy matter, and when it cools it is lusterous, and partakes of the nature of oil and wax, from which circumstance the Dr. calls it "*Kerosene.*" But it does not require this preparation to make gas. As it has no sulphur in its composition, it will not corrode the metals in its manufacture, nor will it give out any of those noxious vapors so well known to us Yorkers as connected with coal gas. It gives off its gas in one-fourth less time than coal, and yields double the quantity, weight for weight.

He says :—

"According to the lowest estimate, the inhabitants of the city of New York would save $74,000 a year, in the quantity of gas they now consume, by using bitumen instead of coal for gas, in the cost of material alone. This saving would be independent of the cost required to manufacture coal gas, as compared with that derived from kerosene, or bitumen, and the light would be far superior to that now supplied.

The cost of the material (coal) that now supplies gas for New York, must be estimated at $1 for every 1000 cubic feet of gas. The bitumen may be abundantly supplied for $5 per ton. The cost of bitumen, therefore, to supply 1000 cubic feet of gas, would be only $0,38. At a moderate calculation, by substituting bitumen for coal, the gas may be supplied to the consumer at less than one half of its present cost, and the manufacturer still make a profit. By using bitumen and the patent retort, the actual cost of manufacture of 1000 cubic feet of gas need not exceed five cents.

The inquiry at once presents itself, what are the resources of bitumen or asphaltum. This inquiry will be perfectly satisfied by referring to an able work written by R. C. Taylor, Esq. The lake of bitumen of Trinidad is altogether inexhaustible ; or, as stated by that author, "might furnish abundant supplies for the whole world." Besides the abundance of this mineral along the whole coast of South America, Mexico and Texas, it abounds in the Island of Cuba, where a single stratum, six miles from Havana, is no less than 144 feet in perpendicular thickness.

Treating of the bitumen of Barbados, Mr. Taylor says : "It could be employed in the production of gas, of which it would furnish a large quantity of a very rich quality, even exceeding that of Cannel coal." "The best for that purpose hitherto known." But no discovery had been made by which this material could be applied to the general purposes of illumination, until the present. The above author states that "We know not if any practicable employment of a mineral substance here so astonishly abundant, has yet been engaged, or undertaken. It was surely not placed there in vain." The discovery and improvement now introduced, call into operation this hitherto worthless substance."

This is certainly a valuable discovery induced, and Prof. Gesner has been exhibiting the gas in this city, as made from his newly invented retort, and it has been highly admired. It is also well adapted for the manufacture of the gas on a small scale, and this rendered it of very great importance to the introduction of gas lighting into villages.

The best way of advertising an invention is to publish an engraving of it in the Scientific American.

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Scientific American

NEW YORK, FEBRUARY 16, 1850.

Civilization, Inventors, Invention and the Arts.

REPORT OF THE COMMISSIONER OF PATENTS.—Part of this Report has been issued in a very neat form, by J. S. Redfield, of Clinton Hall, this city. It consists of 100 pages of closely printed matter, and is illustrated with a number of good wood cuts relating to the Art of Propulsion. It is our intention to present the principal part of these in our history of Navigation, and we therefore will not say anything upon that subject at present, but there are so many new subjects touched upon, —so many rare facts brought forth in the other parts of the Report, that we think it will be of interest to every one of our subscribers to read a few of these which we have selected.

In the introduction, differing from "Douglas on the Advancement of Society," he says in reference to the *Advent of the Arts*, "Man has everywhere made his debut in the character of an Orson. The annals of all the people of old began with their condition as savages—those of the Jews form no exception." This is a singular chapter, but we pass over it to another part. "The Earth," he says, "is a laboratory, in which, as a chemist, man has hardly begun to operate. When every force, latent and manifest is brought into service, and made the most of,—when man has spread his influence over every foot of the earths surface, and brought the stores beneath it within his reach—when mundane matter in whatever form appearing, is made to contribute to its ends, and when this planet is wholly changed from its natural wildness, into a fit theatre for cultivated intelligences, it will be time enough to speak of human advancement as culminating, and the arts as having reached the limits of perfection. Till these things come to pass, instead of looking for no more discoveries we should be prepared for a constant succession of them." So we think. On the dignity of Mechanical pursuits, he says, "this world is one of God's Workshops, and the universe a collection of his inventions, and in HIM the squeamishness of half-formed philosophers and of high bred fashionables respecting manual and mechanical pursuits, finds no sympathy, but terrible rebuke. His works proclaim his preference for the useful to the merely imaginative, and in truth it is in such, that the truly beautiful or sublime is to be found. A steamer is a mightier epic than the Illiad,—and Whitney, Jacquard and Blanchard might laugh even Virgil, Milton and Tasso to scorn."

In regard to what inventors have done, he says, "The idea is common that *savans* discover and inventors apply. It is not always so. Nearly every marked advance in civilization, began with and is due to the latter. The invention of printing, spinning frames, power looms, the steam engine, gas lights, steamboats, lithography, telegraphs and railroads, honorably distinguish *our* times" and mark the rapid advance of civilization. The chapter on this subject is very interesting. There is a capital chapter on the oppressions of the industrious classes during the dark ages, by the most unrighteous patents or monopolies, whereby workmen and manufacturers suffered the most unjust persecutions and exactions. No one should fail to read to this chapter, it would enlighten those calumniators of the present age, who feast with riotous pleasure upon the "good old days." He believes that Prime Motors are the Chief Levers of Civilization—such as the Water Wheel, Steam Engine, &c. He says, "there is no hazard in asserting that none of the ordinary modes of employing water as a Motor, are perfected.—The re-acting water wheel, until a recent period was little else than a toy in the lecture room, while, as exemplified in the *turbine*, the same principle has yielded eighty per cent. of the power employed. This strongly admonishes us, certainly, to investigate every source of mechanical force, with a view to economise it. Prime movers are too precious gifts to be only half used up. The turbine elucidates a truth, which inventors, above all other men, should cherish." In reference to Electric Motors he says: "At the present cost of metalic fuel (zinc), electro magnetism cannot become commercially valuable, nor can it compete with steam in any of its ordinary applications—for there is more virtue in a pound of coal than five of zinc. He believes that a new power is now wanted and looked for, and that there is a vast field of enterprise open for its introduction.

Nature, he believes, has yet her hidden mysteries, which the genius of man must extort from her. The water-spout can be observed in its workings, lifting water from the bosom of the ocean, but no one has yet been able satisfactorily to explain the causes of such a phenomenon.

We have but gleaned a few kernels from this Report; it may furnish us with texts and matter for one or more future reviews. In all likelihood it will not be published by government for some months, and this suggests to us the propriety of some inventor introducing an improvement in the mode of doing government business,so as to get the printing executed better and faster than has been done during the past two years. No one can get this Report by writing to Washington—it is a private enterprise, engaged in by the sensation created for the whole of the Report, from the extracts of it which were published in the Tribune of this city. See advertisement.

Pneumatic Pile Driving.

In our last number we gave a representation of a pier that was built upon Tubular Piles, sunk by the invention of Dr. Potts, who has just secured a patent for the United States.—In our description last week, we promised to give a fuller explanation of the process, and we will now proceed to do so.

Pile Driving is of great importance to the Hydraulic Engineer, and the means of expediting the old plans, have long engaged the attention of many eminent men. By the present plans, a great power is exerted by repeated blows to force down the piles—the soil has to be forced apart, to make room for the pile which if driven in like a wedge. The depth to which a pile can be driven is limited by the length of the pile of timber. The new process of Dr. Potts is entirely different from any heretofore employed. He employs a hollow pile, places it perpendicular on the spot where it is to be sunk, exhausts the air from it by an pump, the soil is drawn up through it from below, and the tube sinks as the soil is drawn up by the continued operation of the air pump. The pile is not driven down by the mere pressure of the atmosphere on the top of the pile, but by the continual undermining process going on at the bottom of the tube, and the pressure likewise—thus a driving and excavating process goes on at the same time. This is the distinction between this and the old plan of pile driving, and experience has satisfactorily proved that in proper situations this new process is by far the best. The tubes are made of cast iron, and can be constructed in such a manner that one can be tightly fitted on to the other, as it is sunk nearly to the surface of the water, and thus a pile of an hundred feet may be made up and sunk in sections. It will be observed that this process is only adapted for sinking piles in sand banks or bars, but at the same time it will sink a tube farther and easier in the most compact sands, than can be done by the old methods. These tubes have been sunk for a beacon on the celebrated Goodwin Sands, to a depth of 32 feet. Admiral Beaufort experimented on the same sands with a steel bar, and could drive it down only eight feet with a sledge hammer. It is a process which commends itself for carrying telegraph wires over many rivers, by sinking piles for posts at considerable distances from the shore. There are many places very favorable to carry out such an object. The practical operation of this discovery developes one fact, which would not readily be apprehended, viz., that gravel, clay, shingle and stones of considerable size are drawn up, and the stones, like the large sparks from a locomotive, are drawn up first—the heaviest bodies thus running up faster than the lighter particles. This is owing to the cohesion of the masses, for the pressure is equal on the whole surface, but it shows that these piles may be sunk in very refractory soils, if there is moisture to assist the adhesion of the soil in passing up through the tube, and what is essentially necessary at the same time, prevent the air from getting into the tube in any way. In a good operative model, we have seen masses of metal carried up through the tubes, with apparently greater facility than sand. The principle can be applied to a great number of purposes—such as well sinking in many places, and also for excavating itself. One good application of it would be to make sea walls by sinking the tubes, forming them into groins, and filling them up with concrete, which in time would form a wall better than any other kind whatever, and certainly at far less expense. These are our opinions, formed from observation.

We could say a great deal upon this subject, but we trust that enough has been said by us to convince our Civil Engineers that if they do not pay particular attention to this invention, they will be blind to their own interests, and exhibit a want of scientific enterprise. For piers, embankments, &c., in quicksands, we know of no discovery equal to it. If it had been employed in the construction of the U. S. Dry Dock at Brooklyn, it would, we believe, have saved at least half a million of dollars.

For the Scientific American.

Explosion of Steam Boilers.

The recent and horrible effects arising from the explosion of steam boilers, induces me to do what I have long intended, viz., to make public my own experience in the management of them—owning and running a steam engine, as I did, for a long time in this city, the boiler of which was old, and running the engine, as I did, for a long time at from 100 to 150 lbs. pressure, as indicated by the weights on the safety valve (which was one of the best construction and kept perfectly clean, so as to indicate the pressure upon it), I can, with truth, testify to the following:—The boiler was 22 feet long and 30 inches in diameter. When I commenced business I had it examined by a careful and competent boiler maker, whose report was, that with care it might last for years, so far as he could judge by entering it at the "man-hole" and sounding it. He said, however, that he could not judge of the strength at the "fire line," except from its appearance, which was fair. At this line, you are aware, he could not judge by "sounding," the bricks being in contact with the boiler. I drove the said engine some three years without any repairs to the boiler, and at the pressure above stated, when I sold out; and the boiler was taken out to be repaired by my advice. On taking it to the boiler maker the workmen were astonished at its having been strong enough to withstand the pressure, they being aware of the work done in the establishment, being able, as I witnessed myself, to strike a small hand-pick, weighing from 3 to 4 pounds, the point from 1-4 to 3-8 in diameter through the boiler, every blow along the fire line, and the bottom sheets which had been exposed to the fire.

The engineer and fireman first employed by me were content with keeping the water above the lower guage cock, but certain that there was no necessity for so large a space as steam chamber; and finding that the lapse of but a few minutes after a trial of the guage, showing water at that point, that nothing but steam issued, I gradually increased the amount of water in the boiler, noting the effect, and was agreeably surprised to find that keeping the boiler almost full of water had one good effect. We were not as liable to fall short of steam (the fire being the same) and by obliging the fireman to keep the water at the upper guage, it increased his attention to it, inasmuch as a little too much would cause an overflowing of water into the steam cylinder, which gave him trouble.

I have frequently, since I was engaged in the business alluded to, reflected on the apparent danger we encountered, but have long since come to the conclusion that we would probably have escaped injury for the reasons I will now attempt to describe, and would be much gratified if you would besides giving your own opinion on the subject, submit it to your readers. What I am anxious to have is the opinion of scientific as well as practical men.

It is simply this, that water, being almost incompressible, and steam compressible to an extent limited only as it would seem by the strength of the vessel containing it, that no safe guard is needed to do away with all danger arising from explosions further than *fill your Boilers with water*, constructing them, so far as the steam chamber or reservoir goes, somewhat in the form of locomotive boilers.

No one would contend that there is any necessity for keeping a supply of steam in your boilers, further than is wanted for a few revolutions of your engine, and the amount of heat being the same, as necessary to keep up the supply with the water at the fire line, will certainly give the requisite amount. In fact I found by experience that with the greater quantity of water, less attention was needed.

Compare for an instant, the number of locomotive engines in our country with those of all other kinds: I presume there are many more of the first. Compare the size of their boilers and the power they furnish: are not explosions very rare among them compared with all others? I think so, and believe it to arise from the fact that the engineers are obliged to be at their post and to keep their pump in motion a great part of the time, owing to the flues being near the top of the boiler, and the steam chamber being so small.

I have heard it asserted by scientific men, in whose judgment I feel great reliance, that in case of an explosion of a boiler, "nearly filled," as I have described, that the effects would, in their opinion, be as disastrous as in the case where the water was kept as customary at the fire line; and in the hope that your insertion of this will draw out something valuable from yourselves or others, I submit it to you.

That ten or twenty cubic feet, packed with steam, could do the same damage or exert as much power as one hundred, I cannot believe yet. I saw a boiler some years since which had "burst" a few days previous: it had been nearly full of water, and further than a rent across a sheet exposed to the fire, through which the water escaped and put it out, no damage was done.

To conclude: if, as I firmly believe, all steam boilers could be constructed advantageously, as described, and a United States law was passed, that all steam engines of ten horse power and upwards, used on board steamboats or in manufactories, should have connected with them an apparatus which would ring a bell at stated intervals; say every 20 minutes, or a certain number of revolutions of the engine, on which signal some one having charge of the boilers would be required to try the guage cocks, a heavy penalty being imposed on the captain or owners for every omission—putting on water if necessary, I firmly believe we could and would travel by steamboat in perfect security. Yours truly,

Phila. ENQUIRER.

[We will make some remarks on this most important subject next week. We would merely state here (as this is a question of importance every moment), that there are truths in the above letter which cannot be set aside by any sophistry whatever.—ED.

Building in New York.

In the last year 1495 new buildings have been erected, making an increase of upwards of 300 over the preceding year, and nearly double the number erected in 1838. Within the last fifteen years 20,000 structures have been built in this city.

In publishing the list of gold medals, granted by the American Institute, at the late Fair, we omitted to notice that one was granted to Mr. McCormick for his Patent Virginia Reaper. He would esteem it a favor if those Editors who omitted this notice would take the opportunity to insert it.

Erratum.

In our correspondent's letter from Washington, last week where it refers to the articles deposited in the National Institute it mentions "and the *other* fruit," it should read "and the *osher* fruit.

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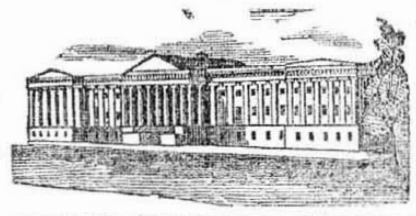

LIST OF PATENTS CLAIMS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending February 9, 1850.

To A. Babbett, of Auburn, N. Y., for improvement in machinery for spooling.

What I claim is not the abstract production of friction between the thread or yarn or any other substance, as the thread or yarn passes from the runners to the bobbin or spool, so as to secure the winding of the thread or yarn tightly on the bobbin or spool, but I do claim as my invention the combination of machinery hereinbefore described, whereby in machines for winding yarns or threads on bobbins or spools, the thread or yarn on its passage from the runners to the bobbin or spool, has applied to it friction produced between the thread or yarn and any other substance, which friction diminishes with uniformity as the pull upon the thread or yarn from the runners increases, and increases with uniformity, as the pull upon the thread or yarn from the runners diminishes, such combination consisting, as shown in the vibrating lever, the stand, the joint, the three pins, the four pins, the box, the spiral spring, any one of the three hooks, the staple, and the guide, substantially as set forth.

To S. G. Blackman, of Norwalk, Conn., for improvement in Carding Machines for preparing bats for felting.

I do not claim the producing an interlocking of the fibres of wool by means of a reciprocating longitudinal movement of either the carding cylinders of a carding machine working against the doffer; but what I claim is the production of the requisite interlocking combination of the fibres of wool preparatory to converting the same into felt cloth, by subjecting the said fibres to a rubbing or combing action while they are upon the doffer of a carding machine by means of auxiliary cards, or other suitable friction surfaces substantially as herein set forth; not intending by this claim however, to limit myself to the special and particular manner of producing the said interlocking of the fibres of wool while they are upon the carding machine doffer, as herein set forth.

To Gail Borden, Jr., of Galveston, Texas, for preparation of portable Soup Bread.

I do not claim the extract of flesh made into what is known as portable soup; but I claim the new and useful manufacture of desicated soup-bread, formed of the concentrated extract of alimentary animal substances, combined with vegetable flour or meal, made into cakes and baked into bread, in the manner substantially as herein described, for the purpose set forth.

[This is one of the most valuable inventions that has ever been brought forward, and will be the means of enabling travellers and mariners to enjoy both vegetable and flesh in a most dainty dish at any moment, and what is better, a traveller may carry a month's provisions in a small tin case. It is now used exclusively by Texan vessels sailing from Galveston.

To James Buck of Bucksport, Me., for improved Excavating Auger.

What I claim is the formation of a machine or instrument for boring the earth under water or otherwise and retaining the substance bored until it can be brought to the surface which I construct in the manner following. I first make two sections of a cylinder or pods, the one of which is enough smaller than the other to admit its turning into the larger one, and I connect them together by pivots through the ends of each, the larger section of a cylinder or pod having a lip similar to a pod auger, and I attach a shaft or handle firmly to the upper pivot, which pivot passes through the centre of the outer section of a cylinder or pod, and is attached firmly to the smaller section of a cylinder or pod, so that by turning the shaft one way, I put it into a pod auger shape, ready for boring. By reversing the motion of the handle or shaft it turns the inner section of a cylinder out of the other, making it into a cylindrical or bucket shape and thereby secure the substance bored.

To D. N. & E. B. Day, of Westfield, Mass., for improvement in Whip-lashes.

What we claim is a new manufacture for whip-lashes by making plaited whip-lashes of spun and twisted threads, or cords, as described, instead of leather thongs, the same being plaited over a central cord or core, extending the whole length, as described, and a swell made of cotton, or other soft and pliable cloth attached to the central core, without rolling, substantially as described.

To C. B. Hutchinson, of Waterloo, N. Y., for improvement in machines for cutting staves.

What I claim as my invention is the mode of cutting staves to the required curvature, with a spiral drawing stroke, by means of the segmental plate, having bars or ribs at its ends, to which the knife is attached, segmental rims moving in the segmental slots formed in the side plates, and containing slots through which the segmental plates move; spiral slots in the plates and bars, passing through the same, substantially as herein set forth.

[This excellent machine is illustrated with four engravings in No. 2, this Vol., Sci. Am.

To J. Haines, of West Middleburgh, Ohio, for improvement in Washing Machines.

I do not claim the tub, nor do I claim fluted rubbers for cleaning clothes, or any of the parts heretofore used for washing clothes, but what I do claim is making the disc with a hinged segment, to admit the clothes beneath the same, being so arranged as to rise and fall vertically as it is turned horizontally over the clothes by turning the vertical rock shaft to the right and left, as described.

To J. Maynard, of Philadelphia, for improved friction roller sash reporters.

What I claim is the combination of the loose roller, spring, and friction wheel applied to the window sash, as herein set forth, whereby the sash is held in any position to which it may be raised.

To C. Jackson & J. Moir, of Cazenovia, N. Y., for improvements in Engines for Carding and Drawing Wool.

1st. We claim the combination of what is termed the main, or condensing cylinder, with the reciprocating rod, to give the carding cylinder, a reciprocating side to side motion, in combination with its rotary motion, in the manner as herein described, or in any other manner, substantially the same, to produce the same effects.

2nd, We claim the combination of a twisting band and drawing rolls, with rub rolls of the common construction, for the purpose of reducing roping, by drawing it with twist upon the carding machine, in the manner substantially as herein described, or in any other analagous manner.

[This is a valuable invention, secured against interference. An engraving of it will be found on page 355 of our last volume.

To R. Montgomery of New York, N. Y., for improved method of punching between rollers.

What I claim is the apparatus for the purpose of punching, consisting of a series of punches thrown out at proper intervals, substantially as above described, either with or without the combined operation of corrugating said plates, as above described.

To D. D. Parmleee, of New Paltz, N. Y., for improvement in Calculating Machines.

What I claim is the making additions of figures by means of keys, each communicating a proper and known motion to an indicator substantially in the manner and for the purpose herein described.

To Wm. Sewell, Jr., of Williamsburgh, N. Y., for improvement in Water Meters.

What I claim is the employment of a flat spring with both sides of which the water, as it enters, communicates substantially in the manner and for the purposes set forth, in combination with the wings, with an adjusting spring in the centre, by means of which improvements I relieve the apparatus from danger arising from obstruction in its movement and the strain caused by the transmission of a non-elastic fluid, and cause it to move with less friction than any other form with which I am acquainted.

To James Spratt, of Cincinnati, Ohio, for improvement in attachments for Lightning Conductors.

What I claim is forming the eye of the metallic attachment with an opening, to allow the passage of a lug on the neck of the isolator, and so that the rod also can be inserted, after the attachment is secured to its place, when this is combined with a lug on the shank of the attachment corresponding to that on the isolator, substantially after the manner and for the purposes herein set forth, that is to say, enabling the rod at any time to be inserted or withdrawn, without disturbing the attachment in the building.

DESIGNS.

To P. J. Simmons, of Troy, N. Y., for design for Stoves.

To J. G. Lamb & C. Harris, (Assignors to Wm. C. Davis) of Cincinnati, Ohio, for Design for Stoves.

To Wm. P. Cresson, David Stuart & Peter Seibert, (Assignors to Wm. P. Cresson) of Philadelphia, for two Design for Stoves. Ante-dated Oct. 1, 1849.

[According to the statement we made when we commenced publishing the claims, we omit those of *Designs*, because no idea of their nature could be obtained by publishing them. In respect to the two last patents above, we would say that they are for different things; the one is for the "Cottage Parlor Air Tight;" the other is for the "Radiator Screen Stove." We pay the Patent Office for all the claims, but it is our object to economise our columns with condensed and useful matter.

Woodworth's Patent--Great Excitement.

A meeting was held at the Syracuse House, Syracuse, N. Y., on the 30th of last month, for the purpose of adopting measures to get a repeal of the Act of Congress which extended the Woodworth Patent for Planing Machines. Hon. M. D. Burnet was called to the chair, and Amos Westcott, Sec'y. The object of the meeting was stated by the President. Hamilton White, Esq., H. Gifford, Esq., and several other gentlemen proceeded to address the meeting, showing the oppressive character of the act referred to, and the necessity of prompt and efficient measures being taken to obtain its repeal, which they had no doubt Congress would grant, as soon as the facts in the case could be brought before them.

Several gentlemen were in attendance from abroad, who had taken great pains to collect the different patents which could have any bearing upon this subject, together with the original and amended specification and claim of Mr. Woodworth, as also a great amount of evidence which has been elicited in the trial of the almost numberless suits which have from time to time been brought for violation of said patent.

These papers were referred to a commitee composed of Amos Westcott, Hon. Thomas Spencer. Henry Gifford, A. C. Powell, E. T. Hayden.

The commitee, after a careful examination of the papers, unanimously reported the following preamble and resolutions:

Whereas, from the testimony laid before your commitee, it is a matter of a great doubt whether the orginal patent granted to Wm. Woodworth, in 1828, for planing machine, was for his own invention, and whereas it is most clearly shown that his amended specification and claim on which this patent was extended by an act of Congress passed in July, 1845 is not only materially different from the original one, but so framed as to embrace an almost unlimited range of machinery, not included in the original; and whereas, this act must hence necessarly have been obtained by misrepresentation; and whereas, the great and extensive demand for such machinery as is embraced under the new claim of 1845 has enabled the owners of this patent to demand, not to say extort, enormous sums from the various kinds of mechanics using such machinery, which they must pay or incur the hazard of being ruined by litigation: it is therefore,

Resolved, That while we would most unwillingly seek to limit either the rights or reward of real inventors, or in any way curtail the encourgement which enlightened legislation will always extend to those who make new and useful improvements in machinery, we are constrained to pronounce the whole scheme of managment as connected with this patent, particularly as shown in, and since the renewal of 1845, as an unprecedented example of misrepresentation, extortion and oppression, not only in many instances ruining the hard working mechanic, but also working great injury to the public, and hence a scheme which the public at large are in duty bound to oppose and resist.

Resolved, That we must heartily concur and join in the call which has been issued and published, appointing a mass convention to be held at Rust's Hotel, in the city of Syracuse, on Wednesday, the 20th day of February next.

Resolved, That the proceedings of this meeting be published in the papers of this city, together with the accompanying call, also in the New York Tribune and Scientific American; and that the call be kept in the papers above mentioned till the time of holding said convention. These resolutions were unanimously adopted.

MOSES D. BURNETT, Chairman.

AMOS WESTCOTT, Sec'y.

The call will be found on another (2nd) Page.

Singular Explosion.

GREENVILLE, Norwich, Jan. 31, 1850.

MESSRS. EDITORS,—On the night of the 29th inst., an explosion took place at the paper mill of Mr. David Smith, in this village, under the following circumstances:—A large egg-shaped boiler, used for boiling rags, made of stout boiler iron, and weighing about four tons, was filled in the afternoon for boiling by putting into it about two tons of rags and half a barrel, or about 300 lbs., of soda ash, and two barrels of lime soda ash, previously dissolved in water, and water put in sufficient to cover the rags—the whole not filling it quite full.—It was then all closed tight with the exception of a small hole at the top, which was left open until it began to boil, then plugged up. It was heated by steam brought through a three-inch pipe, from a distance of eighty feet from the steam boiler, and was situated in a small building 30 feet from the side of the main building. After boiling about five hours it exploded, tearing off a part of the bottom, which was thrown, without touching the mill, high up over the top, and landed 400 feet from the mill, on the other side, or about 500 feet from the place it started from.

There were two distinct explosions, or reports, and the fireman says that the bricks came with the second report, though it was not so loud as the first, and he had just previously turned off a part of the steam. The steam is generated in six boilers, and but a small part of it is used to boil the rags, the rest being used in the cylinder of the paper machinery to dry the paper.

The building in which this rag boiler was situated was shivered into fragments, and another boiler, situated by the side of this one, and apparently filled in the same manner, and boiling at the same time, was left uninjured, with the exception of being moved a few inches. A large iron wrench that was left on the top of the boiler, was carried the whole distance with it—some of the rags and hot water were thrown as high as the top of the mill, which is four stories high

Will you be kind enough to inform your readers what, in your opinion, caused this explosion, and oblige yours, respectfully,

J. S.

[We know of only one instance of an explosion like the above, and we could not account for it, neither can we for the above. We plead ignorance, believing it to be far better to do so than pretend to be learned by a dissertation on the subject, embracing nothing but "words of wondrous length and thundering sound."

All boilers for bleaching purposes, like the one spoken of above, should have covers screwed down, and have safety valves on the covers. It would be better, also, to have a small stream of steam always escaping. This is the French plan and a wise one, we think.

Culture of Cotton in Africa.

A treaty has been concluded, by which the Danish settlements in Africa, on the Gold Coast, have been ceded to Great Britain. It is stated that there is reason to believe that, with suitable encouragement, a supply of cotton of very good quality might be obtained from that part of Africa, where it is now produced, in some quantity and of very good quality, by the natives for their own use.

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TO CORRESPONDENTS.

"V. P. R., of Boston."—Your plan appears to us very different from Cockran's Patent.

"A. N. S., of N. Y."—The plan of your wind wheel appears to us to be excellent.—Should regard it as new and practicable. You had better construct a model and forward it for further examination. The drawings will be kept safe by us until we have time to hear from you again. Paper sent.

"H. L., of Ohio."—Mr. Hecker's letter has been received and the amount placed to your credit. We are now very much engaged in arranging matters connected with the history of propellers and tanning, and may take occasion in future to furnish you information upon gunnery.

"E. M., of Ind."—We have examined the drawings of your Bran Separator, but we have reason to believe that an application for Letters Patent would prove unsuccessful. We are unable to enter into a minute detail of these reasons, but give it as our opinion, in as few words as possible, that no patent could be secured. We have your best good in view.

"J. W. & Co., Mich."—We are unable at present to tell you who has nail keg machinery for sale; perhaps some of our subscribers may be in the way to furnish the information, and should we hear any thing regarding it in future we will make a note of it through our columns. P. Naylor, Stone st., N. Y., can give you all information about the galvanized roofing.

"M. K., of Indiana."—Calomel in any number of doses cannot become corrosive sublimate. Why? Because there will always be atom for atom.

"H. A. F., of Mass."—We do not think that it would be advisable to adopt your form of cylinder cap and bottom, and the piston. It would not, in our opinion, be so easily packed as the common kind.

"R. B., of N. Y."—We know of nothing to keep the casting from sticking in the sand, except care in moulding. Chilled castings avoids that, but it is the sand castings to which you refer. It would be a grand discoverd to obviate the use of the acids.

"L. S., of N. Y."—We received yours on the crank. It is a very able and original article. We would present it, but you know that we have said so much on the subject that we cannot prudently say any more on it at present.

"N. U, of Conn."—We know of no one at present who desires to engage a mechanic to do such work as you wish to engage in.

"S. & Co., Mobile."—Your letter of the 1st inst, is received, and the $15 placed to your credit.

"R. C., of Mass."—We have never seen a leech constructed like the one represented by you, and should think that a patent could be obtained for it. We cannot give our opinion concerning its mercantile value. Physicians or dealers in such articles are more able to advise than we are.

"M. W. H., of N. Y."—We have no numbers containing the description of Mr. D.'s patent.

"F. B. Van S., of Ohio."—We are under the impression that Dr. Chadbourne, of Concord, N. H.. is the proprietor of a Stone Cutting Machine. By addressing him, post-paid, you could ascertain the full particulars. $1 received.

"G. S. of N. H."—The drawings of your propeller have been examined, and we fail to discover any new principle in the arrangement. Paddles have been used to operate so as to present the greatest amount of surface during their passage through the water, and to present their edge to the face of the wheel while rising out of it, working between the rim of the wheel. Contrivances like these have been variously modified. We do not think a patent could be obtained for it.

"G. F., of N. C."—When the model of your Spring Saddle reaches us, we will advise you in regard to its novelty, and the expense of an application for Letters Patent.

"L. B,, of Ala."—At last your model has come to hand. These Members of Congress move slow. Your application will be taken up at an early day.

"D. V., of Ohio."—We cannot learn that any new results have been developed by Mr. P., all yet remains a mystery, so far as we know. $2 received.

"L. P., of N. H."—We never undertake the sale of rights, but we think you had better apply to those dealing in agricultural implements. There are several good houses in Boston of this character.

"P. B., of St. Louis."—Your letter has been sent to Mr. Foster for attention. If you should not hear from him you could address Barry & Fish, of Brockport, N. Y., we understand that they sell drilling machines.

"F. J. E., of Vt."—We cannot furnish the information you want in regard to the Remmington Bridge. $2 received and credited for one year's subscription.

"R. C. J., of Miss."—By reference to No. 27, Vol. 4, Sci. Am., you will find that we have expressed your views; we must therefore decline publishing your article.

"C. H. L., of La."—Your favor containing $3 has been received and the amount credited. We regret that we cannot give you the information asked for relative to the fan machinery. Mr. Edwards, we think, has left the city

"A. B., of N. Y."—Your bound Vol. 4 was sent to Fort Plain by Wells & Co., on the 8th inst.

"R. F. S., of N. Y."—Your letter has been filed for further attention. The engravings can be made here, if you desire it.

"S. S. R., of Tenn."—Your letter has been handed over to responsible parties for attention. The patent papers have been received and lodged in the office, as we have before stated.

"A. J. B., of Mich."—We think your improvement on the lathe a good one, and do not see why a patent could not be secured. Whatever is new and useful about your other invention can also be patented.

"N. M. A. F., of Mass."—C. B. Hutchinson, of Waterloo, Seneca Co. N. Y., has a patent for an excellent windmill, by addressing him you could obtain all the particulars.

"F. H. K., of Pa."—The principle of your invention is similar to that for which application is now pending at the Patent Office, invented by Mrs. O'Meara, of this city. We do not think you could obtain a patent for it.

"H. M., of Ohio."—Several different plans have been constructed for causing the paddles of wheels to come out of the water vertically. We have no great faith in such contrivances after what we have seen. No. 15 sent.

"J. B., of Ohio."—We think your improvements in Grain Separators are new and patentable. You had better send a model. Cannot answer your other questions.

"J. C. W., of N. C."—Such machines as you refer to were made in this city by T. J. Wells, not long since, but he has given up the business and gone to California. We cannot now tell you where they can be had, but will bear the matter in mind. $3 received and placed to the credit of yourself and Mr. Young.

"W. M. P., of Ohio."—The reason why the balls cast in the iron mould had a rough surface, was owing to the air not being allowed to escape from the mould. Afford means for the air to escape, and the skin will be finer than the sand mould—this is what is wanted.

"J. R., of Mexico."—Your order will be attended to.

"J. A., of Mass."—By addressing J. D. Johnson, Esq., Redding Ridge, Conn., you will be able to derive all the information you require concerning the Saw Sharpener.

W. T. C., of N. C.; L. A., of Ct.; R. N. P., of Mass.; G. S. T., of Me., and E. F. W., of Conn.

Specifications of your inventions have been forwarded to you for signature, by mail, during the past week, and we hope you will sign them as early as convenient, and immediately forward them back to this office again.

Money received on account of Patent Office business, since Feb. 5, 1850:—

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For the Scientific American.

On Tanning Leather.—Preparation of Hides.

(Continued from page 168.)

TAWING, CURRYING, AND LEATHER DRESSING

Saffian Leather.—A valuble Saffian or dyed Maroquin leather, almost equal to that of Turkey, is prepared at Astranc, and in other parts of Asiatic Russia. Buck and goat skins are the only ones used for this purpose, and the favourite colours are red and yellow. The general method of preparing the pelt is the same as used in this Country for the dyed Morocco leather: that is, by lime, dog's dung, and bran. Honey also is used after the branning; it is dissolved in warm water, and some of the liquor poured on each skin, spread out on wooden trays, till it has imbibed the whole of the honey, after which it is permitted to ferment for for about three days, and then salted in a strong brine and hung up to dry. The skin is then ready to receive the dye, which for red is made with cochineal and the Salsola ericoides, and alkaline plant growing plentifully on the Tartarian salt deserts, and the colour is finished with alum. When dried, the skins are generally tanned with sumach, but for the very finest reds a quantity of sorrel is used with the cochineal bath, and the subsequent tanning is given with galls instead of sumach, which render the colour as durable as the leather itself. The roughness always observed on the surface of the skin is given by a heavy kind of iron rake with blunt points. The yellow Saffians are dyed with the berries of a species of rhamnus, (the Avignon berry would answer the same purpose, and is used in other Countries,) or with the flowers of the wild camomile.

Shagreen Leather.—This singular and valuable leather is a manufacture almost peculiar to Astracan, where it is prepared by the Tartars and Armenians. For making shagreen only horses' or asses' hides are taken: and it is only a small part, from the crupper along the back, that can be used for this purpose, which is cut off immediately above the tail in a semicircular from, about 34 inches upon the crupper, and 28 along the back. These pieces are first soaked in water till the hair is loose and can be scraped off, and the skin, after being again soaked, is scraped so thin as not to exceed a wetted hog's bladder in thickness, and till all the extraneous matter is got out, and only a clean membranous pelt remains. The piece is then stretched tight on a frame, and kept occasionally wetted, that no part may shrink unequally. The frames are then laid on a floor with the flesh side of the skin uppermost, and the grain side is strewed over with the smooth black hard seeds of the Ala lenta or goose foot, and a felt is then laid upon them, and the seed trodden deeply into the soft moist skin, which gives the peculiar mottled surface for which shagreen is distinguished. The frames, with the seed still sticking to the skin, are then dried slowly in the shade, till the seeds will shake off without any violence, and the skin is left a hard horny substance with the grain side deeply indented. It is then laid on a solid block covered with wool, and strongly rasped with two or three iron instruments, till the whole of the grain side is shaved, so that the impression of the seeds is very slight and uniform: the skins are then softened first with water and then with a warm alkaline ley, and are heaped warm and wet on each other, by which means the parts intented by the impression regain much of their elasticity, and, having lost none of their substance by paring, rise up fully to the level of the shaved places, and thus form the grain or granular texture peculiar to the shagreen. The skin is then salted and dyed.

The beautiful colour is given by soaking the inner or flesh side of the skin with a staturated solution of sal ammoniac, strewing it over with copper filings, rolling it up with the flesh side inwards, and pressing each skin with a considerable weight for about 24 hours, in which time the sal ammoniac absorbs enough of the copper to penetrate the skin with an equable sea-green color. This is repeated a second time to give the color more body. Blue shagreen is dyed with indigo, dissolved in an impure soda by means of lime and honey.—Black shagreen is dyed with galls and vitriol: they are in each case finished with oil or suet

History of Propellers and Steam Navigation.

[Continued from page 168.]

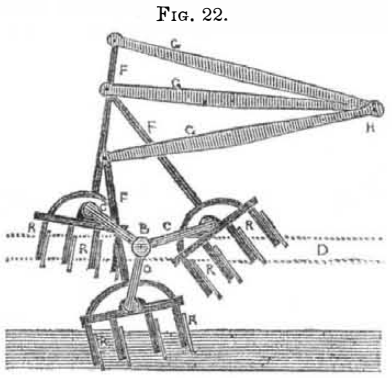
TRIPLE CRANK PROPELLER.

This is a plan of propellers which, when it was brought forward by its inventor, a Mr. Stevens, in 1828, it was somewhat highly flattered. Like all other improvements to supersede the common paddle wheel, its object was to allow the paddle to enter the water vertically and rise out of it in the same way, so as to prevent jarring in the first case, and water lift in the other—two evils attributed to the common paddle wheel, but greatly magnified, we think.

In this engraving we have a side elevation of the machinery in the paddle-box, which is placed on the vessel in the common way. A series of paddles are attached to a three throw crank, and by means of radius and guiding rods, the paddles are made to describe the segment of an elipsis in the water.

Each throw of the crank revolves between two parallel bars, with its bearings upon them, and carrying with them a set of paddles (the bars are not seen.) There are thus four bearings, the innermost of which is fixed to the vessels' side and the outer one on the frame of the paddle box. The circle of motion described by the triple crank being equally divided (120 degrees apart) between each throw, and thus ballance one another on their general axis. This invention was fairly tested by a number of experiments, but failed to rival the old paddle wheel. It has been revived a great number of times since the above date.

Fig. 22.



A is the centre of the axis of the crank CCC, and B is one of its bearings, supported on the side frame of the paddle-box; D D (represented by two dotted horizontal lines,) is one of the longitudinal beams which support the other bearings of the said axis; and the extremities of D D are transverse to support them. In the paddle-box provision is made for the occasional rise of the rods G and F, if it be not thought desirable to carry the paddle-box above them; R R are three sets of paddles, each set being carried by a division of the triple crank, which revolves between, and has its bearings upon parallel bars; the paddles are directed it their appropriate motion by means of the guide rods F F F, and the radius rods G G G, the latter of which work on a fixed beam or center at H; there are arched spreaders, to keep the paddles steady and firm; the paddles are marked R and are fixed to vertical bars in the ordinary way; the upper ends of the bars being inserted in sockets cast in the paddle carriage.

Astronomy.

Messrs. Editors—Believing the following calculations to be worthy of public attention, I am induced to request that the same be laid before the scientific readers of your valuable paper. It is but a fragment of an extensive theory, upon which I desire to add nothing more, until the merits of the present be either acknowledged, or its deficiencies pointed out.

To find the hourly motion necessary to bear any planet, real or imaginary, in a circle round the sun:—

Rule 1st—Divide the Earth's mean distance from the Sun, by the given distance from the Sun at which the balancing velocity is to be ascertained; and multiply the square root of the quotient by the Earth's mean hourly motion, and the result will be the planet's hourly motion at the given distance.

Ex. 1st.—With what velocity per hour must a planet move, at 574,000 miles from the Sun's centre, in order to revolve in a circle?—95,273,869÷574,000=166. The square root of this is 12,884. Then 68,288×12.884=879,822, the velocity required.

Ex. 2nd.—What is the necessary velocity per hour, to drive a planet in a circle around the Sun, at the distance of 6,573,896,892 miles? 95,273,869÷6,573,896,892=.01,449,277. The square root of this is .12,038. Then 68,288×.12.038=8,220: the required hourly motion.

To find the proportion of matter contained in two central bodies: that is, two bodies around which a planet or satellite revolves:—

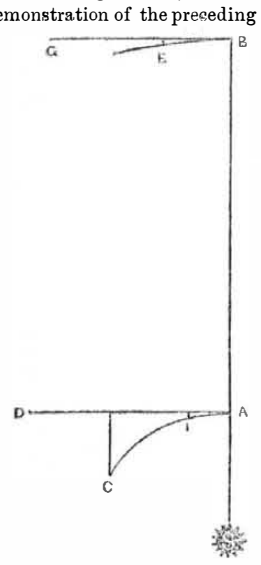
Rule 2nd.—Find the velocities with which two satellites would move, at equal distances from their respective centres, by rule 1st; then divide the square of the greater by the square of the less; or, what is the same, divide the greater by the less, and the square of the result will be the required difference.

Ex. 1st.—How many times does the quantity of matter contained in the Sun exceed that that of the Earth?

The Earth moves in her orbit 68,288 miles in an hour, at the distance of 95,273,869 miles from the Sun. To ascertain the velocity with which a satellite would move round the Earth at the same distance; divide 238,300, the Moon's mean distance, by 95,273,869, the given distance at which the velocity is to be ascertained, and the result will be .00,250,121, the square root of which is .05,001. If by this we multiply 2,283, the Moon's velocity per hour, at her present distance we obtain 114 miles per hour.

Then 68,288÷114=599, and 599×599=358,801, the number of times that the quantity of matter contained in the Sun exceeds that contained in the Earth.

By a similar process we find the proportions between Jupiter and the Earth to be as 281.56 to 1; and between Saturn and the Earth as 116,057 to 1. Having the true proportions between their respective quantities of matter their true comparative densities may be obtained; but passing this by, let us proceed to the demonstration of the preceding rules.



To demonstrate rule 1st, in the annexed figure, A is from S, the central body, only one quarter the distance of B; the attraction is, therefore, 16 times as great upon the former as upon the latter. But that a body at A need only move in its orbit twice as fast as one moving in an orbit at B, will appear from the fact, that upon the arrival of the latter at C, it has fallen from the perpendicular, A D, 16 times as far as B has fallen from the perpendicular, B G; upon moving half the distance, as represented by B E. Thus the velocities being as the square roots of the distances, are shown to be an exact equivalent for the attractions, which are as the squares of the distances.

To demonstrate Rule 2nd, let us assume that while one body would move from A to C, in any given time, another under 16 times less attraction, would move through the square root of 16, or through four times less space in the same time, as from A to I. Then, as their proportional velocities are as 1 to 4, so the distances, through which they have fallen from the perpendicular, A D, are as 1 to 16; and as the differences in the distances fallen are equal to the differences in the attractive forces, therefore the rule is shown to be correct.

Before submitting rule 3d, it becomes necessary to drop the following remarks:—It is assumed that the circumference of the orbit of a planet, which is nearly circular, is equal to the circumference of the orbit of a comet of any imaginable eccentricity; provided it performs its periodic revolution in the same time. From this it follows, that by whatever rule we find the mean distance of a planet, we may likewise find the mean distance of a comet.—Knowing its mean distance, we may obtain its average velocity, by rule 1st. Therefore, to find the velocity with which any comet moves at any given distance from the Sun, less than its mean distance, its mean and perihelion distances being known:

Rule 3d.—Resolve the given distance into a perihelion distance, and proceed as follows: Divide the difference between the mean and perihelion distances, by the mean distance, and multiply the square of the quotient by .5,708; to the result add 1. Then by the product multiply twice the mean distance, and the length will be the length of the transverse axis.

From the transverse axis subtract the perihelion distance, and the result will be the appelion distance. Then divide the appelion by the perihelion distance, and by the square root of the quotient, multiply the comet's average velocity, found by rule 1st. and the result will be the required perihelion velocity: or, by the preceding square root, divide the comet's average velocity, and the result will be its appelion velocity.

Ex. 1.—Required the perihelion and appelion velocities of the comet of 1680.

The mean distance of this comet, computing by its periodic revolution, is 6,573,896,892—574,000 (its perihelion distance)=6,573,322,892÷6,573,896,892=.9,999×.9,999=.9,998×.5,708=.57,068+1=1.57,068. Again, 6,573,896,892×2=13,147,793,784×1.57,068=20,650,976,740, the transverse axis. If from this we subtract 574,000, the perihelion, we have 20,650,402,740, the appelion distance. Then 20,650,402,740÷574,000=35,976, the square root of which is 187.0195. If by this we multiply 8,220, its average velocity, (see ex. 2nd, rule 1st,) we obtain 1,537,300 miles per hour, its per. velocity. Or, 8,220÷187.0195=44 miles, its app. velocity.

If the perihelion and appelion velocities be multiplied by their respective distances from the Sun, one half the result will be their respective areas, which will be found equal to each other, upon being carried out to great perfection by means of decimals. This will be the case, whether the perihelion and appelion distances are in the true proportion or not, rendering it strictly necessary to a perfect result, that the transverse axis be also found to perfection. This the preceding does not do; yet it arrives at so close an approximation, that greater perfection is hardly desirable, varying most when the perihelion is one half the mean distance, whence it approaches perfection both ways. The difference of the squares of half the transverse axis, and the same minus the perihelion distance, being the square of half the conjugate axis; therefore, the whole conjugate axis of the comet of 1680, is 217,746,010 miles.

Wm. Kahler.

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